

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo code (CA750) Migration of Contaminated Groundwater Under Control

Facility Name: Former Quanta Resources (aka Review Avenue Development II)
Facility Address: 37-80 Review Avenue, Long Island City, Queens, N.Y.
Facility EPA ID #: NYD980592562

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contaminated" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

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1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

 X If yes - check here and continue with #2 below.

 If no - re-evaluate existing data, or

 If data is not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Location:

The Review Avenue Development II Site (RAD II) a.k.a. Former Quanta Resources Site is an approximately 1.8 acre parcel located at 37-80 Review Avenue, within a highly industrialized area of Long Island City, Queens, New York. This site is adjacent to the Review Avenue Development I site (RAD I) (separated only by Preston Alley which is an access alley/paper street). The Long Island Railroad tracks border the property along the southwest (see attached Figures 1 and 2).

Site Features:

The site is a fenced, open gravel parking lot. All above ground and below ground tanks, structures, and buildings were removed as part of an interim remedial measure in 2008.

Current Zoning/Uses:

The RAD II site is currently being used as a parking lot. It is zoned for commercial and industrial uses, which is consistent with the surrounding area.

Historical Uses:

The RAD II property and surrounding properties have been used for a variety of industrial purposes since the late 19th century. A Sanborn Fire Insurance Map from 1898 indicates that the site was partially occupied by vacant and dilapidated brick wrecks of an oil refinery. Available information indicates the earliest recorded actual owner of the property was American Agricultural Chemical Company. In 1931 the property was transferred to Triplex Oil. Triplex Oil used the property for refining of used crank case oil for approximately 40 years. From 1972 until 1980 the facility was operated by several different owners including Pentalic Corporation, Sea Lion Corporation, Ag-met Oil Service, Inc., Hudson Oil Refining Corp., and Portland Holding Corp. In 1980 Quanta Resources acquired the property, and used the property for the re-refining of used crankcase oil and other liquid recycling before filing for bankruptcy on October 6, 1981. Other than its current use as a parking lot, the site has been inactive since being abandoned in November 1981.

Site Geology and Hydrogeology:

The site is underlain by several feet of urban fill. The fill overlies unconsolidated glacial deposits, predominately interbedded fine to coarse sand with some laterally discontinuous layers of silt and clay. Groundwater occurs at a depth of about 20 feet below ground surface. The general direction of groundwater flow is to the south-southwest, toward the Newtown Creek. A light non-aqueous phase

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liquid (LNAPL) is present at the watertable under the site.

2. Is **groundwater** known or reasonably suspected to be “**contaminated**”¹ above appropriately protective “levels” (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

 X If yes - continue after identifying key contaminants, citing appropriate “levels,” and referencing supporting documentation.

 If no - skip to #8 and enter “YE” status code, after citing appropriate “levels,” and referencing supporting documentation to demonstrate that groundwater is not known or reasonably suspected to be “contaminated.”

 If unknown - skip to #8 and enter “IN” status code.

Rationale:

Nature and Extent of Contamination:

A viscous light non-aqueous phase liquid (LNAPL) is present at the watertable over the entire site. The LNAPL is a weathered petroleum. Groundwater flow is to the south-southwest toward the Newtown Creek. The extent of the LNAPL has been delineated and it has not migrated beyond the Long Island Railway tracks (see Figure 2).

Known or suspected contaminants include: Petroleum, Chlorinated Solvents, other VOCs and metals, impacting the soil and groundwater.

Contamination at the site is primarily VOC's and SVOCs within the LNAPL. Total VOCs in the LNAPL range from 134 to 1,816 ppm, total SVOCs range from 1,026ppm to 2,227ppm. In groundwater, trichloroethene ranged from non-detect to 16 ppb with only one sample exceeding the groundwater SCG of 5 ppb. One groundwater sample had a benzene concentration of 7.8 ppb exceeding the groundwater standard of 1ppb, and chloroethane was at 20ppb, exceeding the SCG of 5ppb. Methyl tert-butyl ether (MTBE) was detected at 250ppb exceeding the SCG of 10ppb. MTBE is likely from an off-site source.

References:

Record of Decision – Quanta Resources Site (a.k.a. Review Avenue Development II) Long Island City, Queens, New York, Site Number 2-41-005, February 2007

“Remedial Investigation Report – Quanta Resources Site – Long Island City, Queens, New York”, June 2005, Golder Associates

¹“Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate “levels” (appropriate for the protection of the groundwater resource and its beneficial uses).

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“Phase I Remedial Investigation Data Summary Report – Quanta Resources Site – Long Island City, Queens, New York” January, 2005, Golder Associates

“Phase II Investigation – Quanta Resources Site No. 241005 – Long Island City, Queens County”, May 1990, Lawler, Matusky & Skelly Engineers

“Phase I Investigation – Quanta Resources Site No. 241005 – Long Island City, Queens County Volume II Appendices A – H”, May 1990 Lawler, Matusky & Skelly Engineers

“Phase II Investigation – Quanta Resources Site No. 241005 Long Island City, Queens County Volume III Appendices I-J”, May 1990, Lawyer, Matusky & Skelly Engineers

Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York Phase I – Preliminary Investigation Final Report 0 Former Quanta Resources Site” September 25, 1984, Woodward-Clyde Consultants, Inc.

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within existing area of contaminated groundwater² as defined by the monitoring locations designated at the time of this determination)?

- X** If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the existing area of groundwater contamination².
- _____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the existing area of groundwater contamination²) - skip to #8 and enter “NO” status code, after providing an explanation.
- _____ If unknown - skip to #8 and enter “IN” status code.

Rationale:

The existing area of contaminated groundwater is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this

²“existing area of contaminated groundwater” is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of “contamination” that can and will be sampled/tested in the future to physically verify that all “contaminated” groundwater remains within this area, and that the further migration of “contaminated” groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

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determination. The LNAPL mass at the site is stable. A localized groundwater mound exists just southwest of the site. This groundwater mound is presumed to be caused by a discontinuous clay lens in the glacial interbedded sands. The mound results in localized radial flow of shallow groundwater which may help to prevent migration of the LNAPL. As stated previously, contamination at the site is primarily VOC's and SVOCs within the LNAPL. An area-wide LNAPL recovery via a combination of single phase and vacuum-enhanced recovery is currently operating on site and several thousand gallons of LNAPL have been removed by this system to date.

References:

Record of Decision – Quanta Resources Site (a.k.a. Review Avenue Development II) Long Island City, Queens, New York, Site Number 2-41-005, February 2007

“Remedial Investigation Report – Quanta Resources Site – Long Island City, Queens, New York”, June 2005, Golder Associates

4. Does “contaminated” groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

X If no - skip to #7 (and enter a “YE” status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater “contaminated” does not enter surface water bodies.

_____ If unknown - skip to #8 and enter “IN” status code.

Rationale:

The only potential surface water body effected is the Newtown Creek which is approximately 450 feet from the southwest boundary of the site. As previously mentioned a localized groundwater mound exists just southwest of the site. This groundwater mound is presumed to be caused by a discontinuous clay lens in the glacial interbedded sands. The mound results in localized radial flow of shallow groundwater which may help to prevent downgradient migration of the LNAPL. This combined with the high viscosity of the LNAPL and low LNAPL gradient results in a condition where the LNAPL from this site does not pose a threat to the Newtown Creek (the horizontal groundwater gradient is nearly flat, 0.0015ft/ft). To some extent, the LNAPL mass appears to be naturally contained.

References:

Record of Decision – Quanta Resources Site (a.k.a. Review Avenue Development II) Long Island City, Queens, New York, Site Number 2-41-005, February 2007

“Remedial Investigation Report – Quanta Resources Site – Long Island City, Queens, New York”, June 2005, Golder Associates

5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**”

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(i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “level,” and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter “YE” status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of “contaminated” groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter “IN” status code in #8.

6. Can the **discharge** of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁴)?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site=s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,⁵ appropriate to the potential

³As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

⁴Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a

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for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater cannot be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the existing area of contaminated groundwater?

 X If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale:

The site has an ongoing LNAPL collection system which is monitored and is operating (see Figure 3 for monitoring network). Operation, monitoring and maintenance will performed in accordance with the Site

_____ rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

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Management Plan (SMP) that was reviewed and approved by the NYSDEC & NYSDOH.

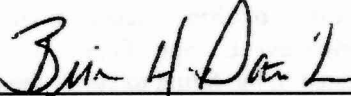
8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

YE YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Former Quanta Resources (aka Review Avenue Development II), EPA ID NYD980592562 located at 37-80 Review Avenue, Long Island City, Queens, N.Y. Specifically, this determination indicates that the migration of known or reasonably suspected to be "contaminated" groundwater is under control, and that monitoring will be conducted, as necessary, to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater". This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

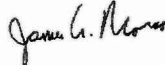
____ IN - More information is needed to make a determination.

Completed by:


Brian Davidson
Remedial Project Manager

Date: 3/29/16


Supervisor:


James Moras, P.E.
Section Supervisor

Digitally signed by James Moras
Date: 2016.03.31 12:21:01 -04'00'

Date: 3/31/16

Director:


Robert Cozzy, P.E.
Director, Remedial Bureau B
Division of Environmental Remediation
New York State Department of Environmental Conservation

Date: 3/31/16

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Locations where References may be found:

New York State Department of Environmental Conservation, Central Office
Division of Environmental Remediation
625 Broadway 12th Floor
Albany, New York 12233-7013

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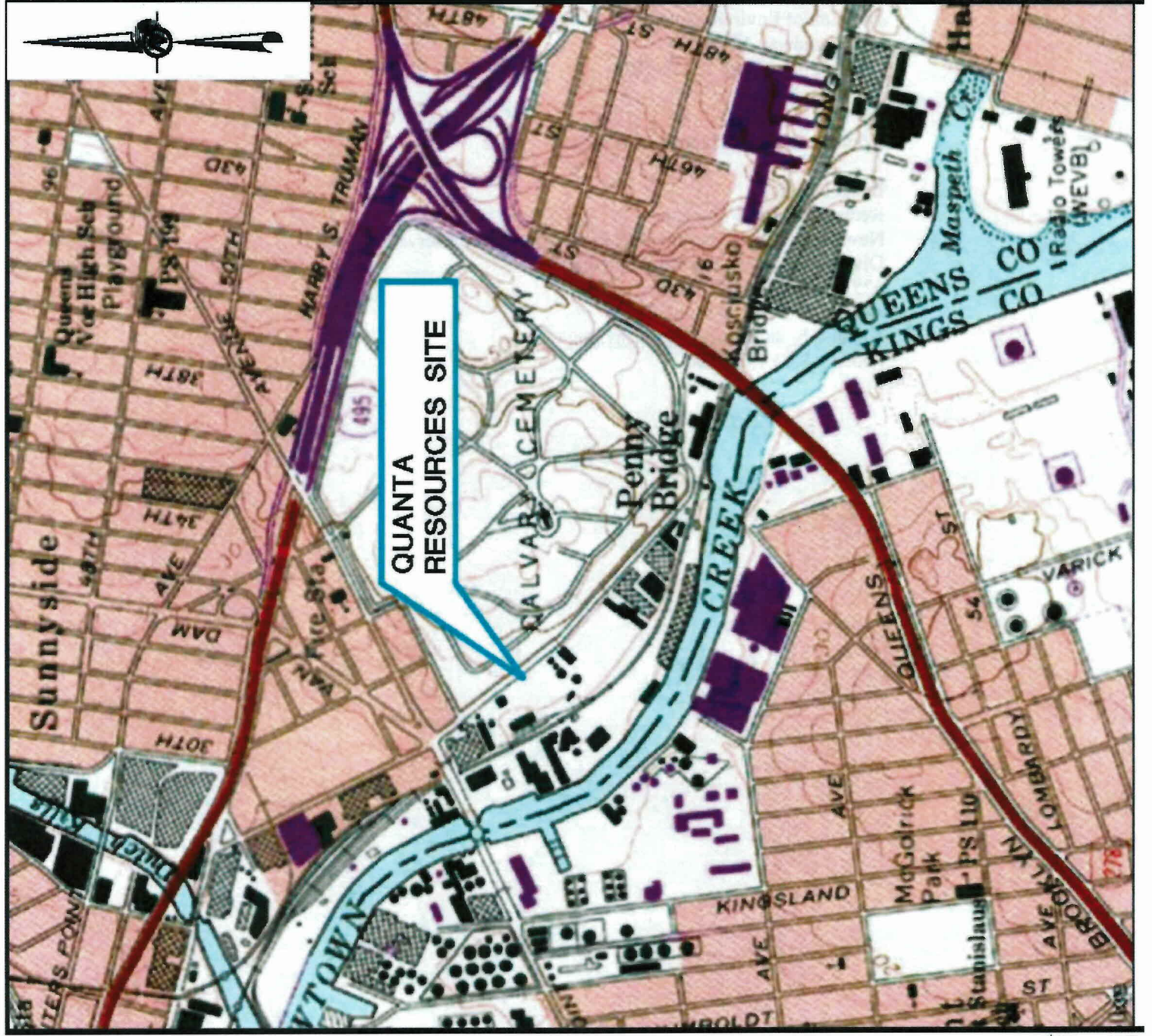


Figure 1

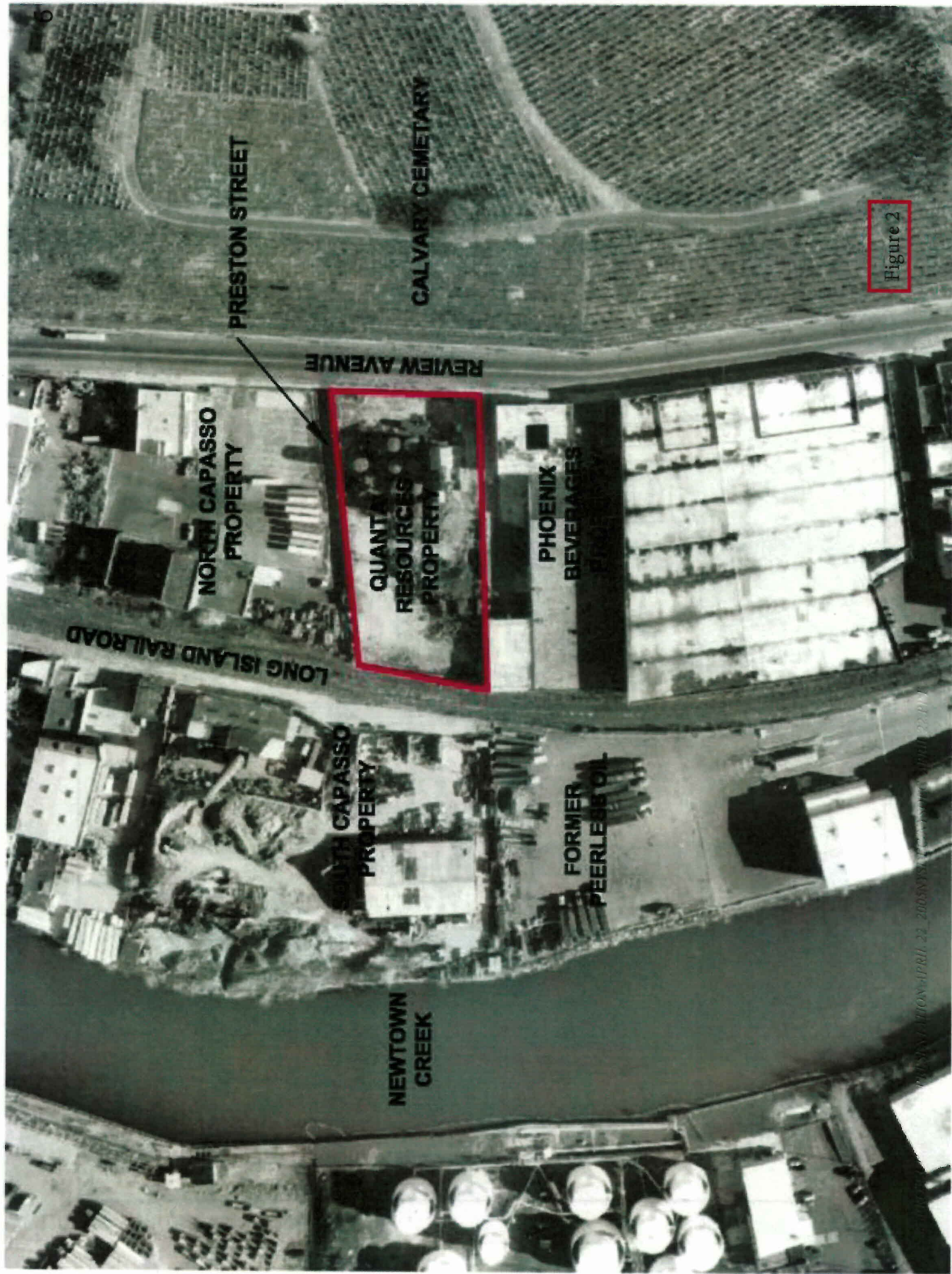
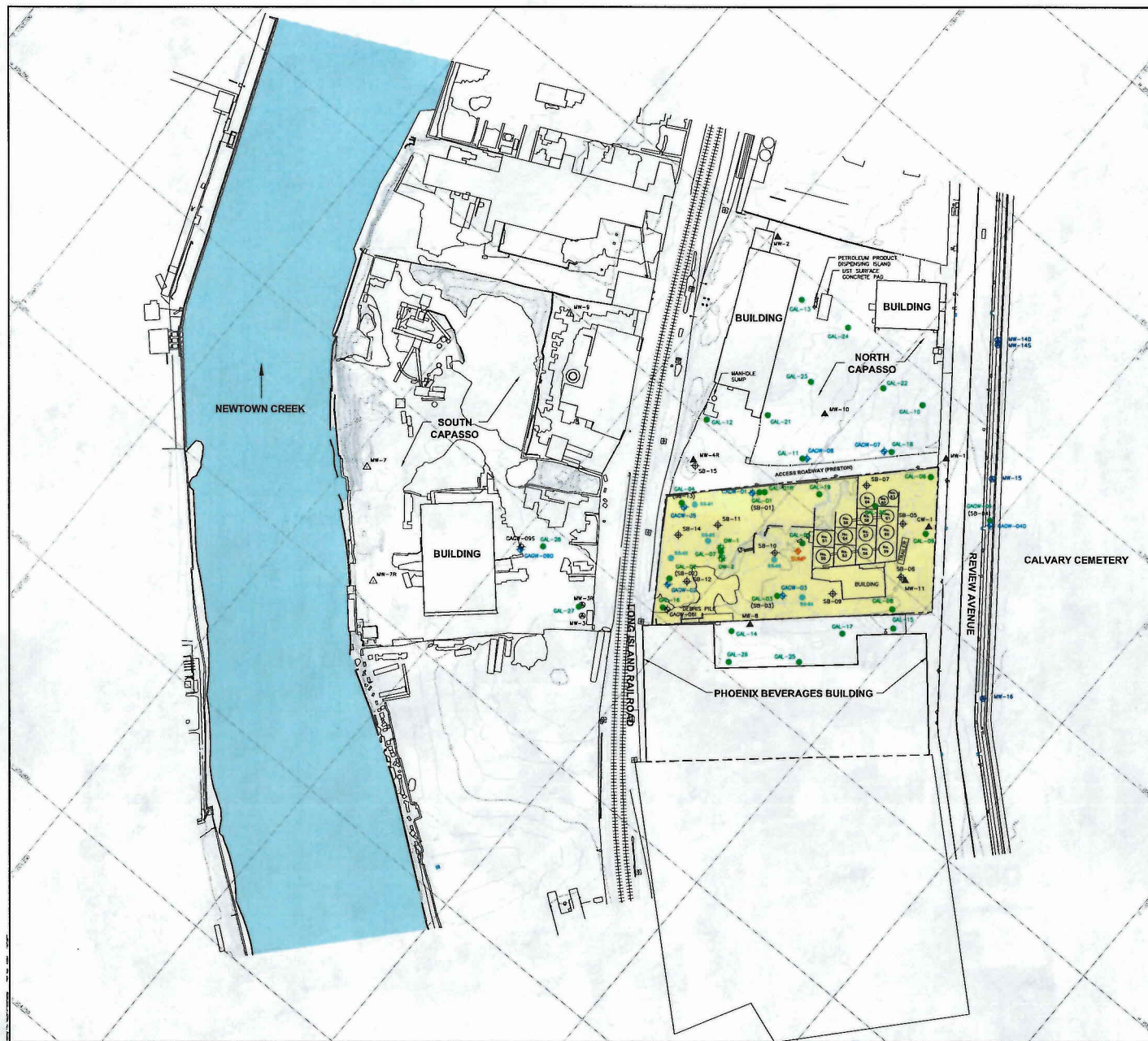


Figure 2



LEGEND

- SURFICIAL SOIL SAMPLE LOCATIONS
- LUMP MONITORING WELL (GOLDER ASSOCIATES 2003/2004/2005) (SEE REFERENCE 2)
- ◆ SHALLOW GROUNDWATER MONITORING WELL (GOLDER ASSOCIATES 2004 AND 2005) (SEE REFERENCE 2)
- ◆ DEEP GROUNDWATER MONITORING WELL (GOLDER ASSOCIATES 2003/2004/2005) (SEE REFERENCE 2)
- ◆ SOIL BORING (GOLDER ASSOCIATES 2003/2004) (SEE REFERENCE 2)
- ◆ NEIGHOR CHEMICAL INVESTIGATION WELL LOCATION (NOVEMBER 2000) (SEE REFERENCE 2)
- EXISTING ON-SITE AND OFF-SITE MONITORING WELL LOCATION (SEE REFERENCE 2)
- EXISTING OFF-SITE MONITORING WELL LOCATION (LOCATION APPROXIMATE)
- SLUMP (SEE REFERENCE 2)
- LUMP PILOT TEST STUDY OBSERVATION WELL (GOLDER ASSOCIATES 2004) (SEE REFERENCE 2)
- EXISTING OFF-PROPERTY MONITORING WELL LOCATIONS (SEE REFERENCES 5 AND 6)
- EXISTING ABOVE GROUND TANK (REPORTED TO BE EMPTY AND DECONTAMINATED)
- QUANTA PROPERTY BOUNDARY (SEE REFERENCE 3)
- ===== RAILROAD
- FENCE LINE
- 5 FOOT CONTOUR LINE (FT-MSL)
- 1 FOOT CONTOUR LINE (FT-MSL)

REFERENCES

- 1) BASE MAP TAKEN FROM DIGITAL FILE 2148.dwg, ENTITLED TOPOGRAPHIC SURVEY OF QUANTA RESOURCES' SUPERFUND SITE LONG ISLAND CITY, NY, PROVIDED BY GSDO CORPORATION, DATED JANUARY 11, 2004.
- 2) WELL COORDINATES DATA FROM A MICROSOFT EXCEL FILES QUANTA SUPERFUND SITE, PROVIDED BY GSDO CORP., 2148A 8-23-04.dwg, 2148A 4-11-05.dwg, AND 2340 MONITORING WELLS.dwg, PROVIDED BY GSDO CORP.
- 3) PROPERTY BOUNDARY TAKEN FROM DIGITAL FILE 2148 Boundary.dwg, TITLED "MAP SHOWING BOUNDARY OF BLOCK 312 LOT 68", DATED APRIL 29, 2004, PROVIDED BY GSDO CORP.
- 4) DURING FIELD BOUNDARY REVISED PER FIELD OBSERVATIONS MADE BY GOLDER ASSOCIATES PERSONNEL DURING SITE VISITS.
- 5) LOCATION OF MW-9 DIGITIZED FROM HANDCOPED FIGURE TITLED "GROUNDWATER CONTOUR", PROVIDED BY HALEY & ALDRICH, DATED FEBRUARY 2004.
- 6) LOCATION OF MW-7 DIGITIZED FROM HANDCOPED FIGURE TITLED "SITE PLAN WITH SITE INVESTIGATION BORING LOCATIONS", PROVIDED BY CHAMBER, DATED SEPTEMBER 2000.

SCALE
0 50 100
FEET

REV	DATE	DES	REVISION DESCRIPTION	CHKD	CHK	APP
1	11/03/05	SSM	QUANTA RESOURCES SITE SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT QUEENS COUNTY, NEW YORK			
REMEDIAL INVESTIGATION MONITORING POINTS AND VICINITY PLAN						
<div style="display: flex; align-items: center;"> <div> <p>PROJECT No. 003-0171 FILE No. 00341510004</p> <p>DESIGN BY SSM 11/03/05 SCALE AS SHOWN REV. 2</p> <p>CADD BY AM 11/03/05</p> <p>CHECK BY SSM 11/03/05</p> <p>REVIEW BY RSM 11/03/05</p> </div> </div>						
						FIGURE 3